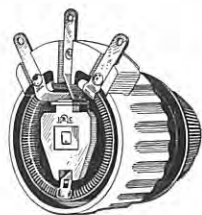




## ABOUT POWER RHEOSTATS



Our new Power Rheostat (PR-25) is conventional in size, but not in design. We kept in mind its basic function of dissipating heat.

Metals are, of course, the best heat conductors, and aluminum is one of the best materials in this regard. So, the shell of our new job and the core on which the resistance wire is wound are both of aluminum. This results in a hottest spot temperature rise of only 140 degrees C. when 25 watts is applied to the element. Most important — the full 25 watts can be applied to as little as one-fourth of the winding with a rise of only 155 degrees C. Such treatment would severely overload the ceramic type.

The rest of the design, too, has been given customary IRC care. The winding is insulated for 1,100 volts to ground with electrical mica and specially treated asbestos. The terminals and shaft are insulated with ceramic. Current is carried direct to the rotor arm through a flat clockspring type connection — no sliding contact. The contact shoe is self-aligning and

made of beryllium copper. Rotor contact pressure is furnished by a spiral steel spring separate from the current carrying spring. The unit is supplied complete with bakelite knob in all standard ranges from  $\frac{1}{2}$  ohm to 5,000 ohms.

We recommend it for filament control of the power stage in your transmitter. The filament voltmeter should be connected directly across the socket terminals so as to eliminate any error due to voltage drop in the filament leads. Operation of your power tubes at the correct filament voltage is extremely important.

This unit has three terminals, so it can also be used as a potentiometer voltage divider. It makes a really deluxe adjustment for bias voltage where the wattage is within 25 watts and where the voltage to ground does not exceed 1,100 volts. The adjustment can then be made by a knob from the front panel with no danger of contacting high-voltage circuits.

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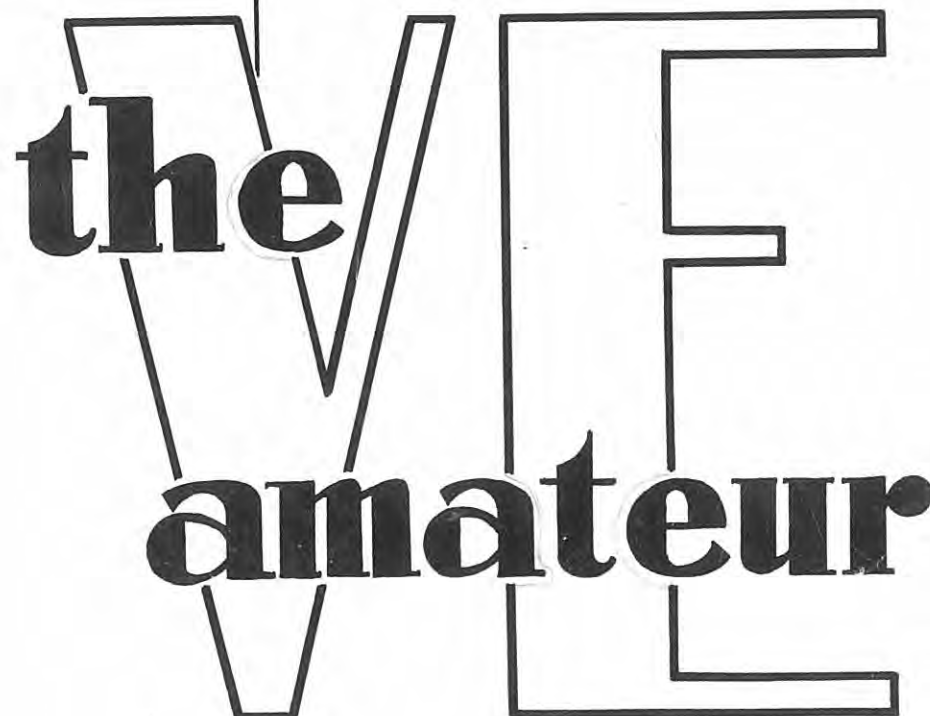
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PUBLISHED MONTHLY BY  
THE VE OPERATORS' ASSOCIATION

AT  
106 JARVIS STREET  
TORONTO, ONTARIO, CANADA

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## What Do You Talk About?

In the course of a discussion on amateur radio, a BCL recently asked a ham what he talked about on the air. It is a question which has been frequently asked, and applies particularly to CW operation, since phones "speak for themselves."

What do we really talk about?

Perhaps, were we to be frank, we would admit that the majority of CW conversations consist of little more than RST and weather reports coupled with rig details.

A ham may do what he likes with his QSO's. That is his inalienable right and is none of our business. Just the same, we are wondering if we derive the utmost pleasure and enjoyment from our radio contacts. Is the time we devote to amateur radio worth just a signal report? Is the friendliness of the man at the other end properly acknowledged by a mere nod? On the other hand, is there something in the nature of a conversational obligation imposed on the man who establishes a contact? Is he not actually paying a visit? Have we not, in effect, walked across the threshold of the home of our contact and grasped his hand in a warm, sincere and friendly shake? As a visitor, have we not some social responsibility?

No doubt, RST reports mean something to the real experimenter. We question, however, that QRK, to the average ham, is scientific data which mysteriously unfolds the whole realm of analytical engineering. Yet, many of us are satisfied to make that information the extent of a QSO. We recall many of our confrères who have positively no flair for experimenting, and who take all their pleasure from operating—even to the extent of sending out thanks for the report, then knocking out another CQ. As we have already said, that is a ham's privilege, but—is he missing something?

The man we like to meet on the air is the man who, were he to drop into the house, could carry on a conversation. He is the type of man who could sit down

in any company and contribute towards the advancement of the discussion. He is a person who is interesting to meet face to face, and from whom we are sorry to part. The individual who would probably give us the least pleasure from his dropping in would be the man who would tell us he is glad to meet us, our furniture has an appeal value of ten per cent, the temperature of our living room is 80—cheerio. And yet we meet his counterpart on the air.

It is our experience that an evening devoted to one or two conversational QSO's is a much more pleasurable and profitable evening than one spent gathering in a dozen signal reports.

The ability to discuss and converse is a real asset to any man, and is a quality which can be developed. Amateur radio is a medium for that development.

In a general conversation there is scope for versatility. Its range will be determined by likes and dislikes just as would the conversation in the course of a personal meeting or visit. In common with any conversation amongst friends, there is an educational value to be placed on our QSO's.

When working someone located in an industrial centre, we can gather information on the main industry, the condition of the labor market, employee welfare and recreational activities, and other items of interest.

Details regarding the business followed by our contact are instructive, as also would be a summary of the advantages his town has to offer. Features which his locality has to offer to tourists would be illuminating. There is no limit to the instructive information we may receive.

The opportunities extended by our hobby for the broadening of one's knowledge are tremendous. Do we take full advantage of them? We should be concerned about preserving the sociability and fraternalism of ham bands. We should develop the lasting friendships that are possible through the medium

(Continued on page 6)

## Symposium on Microphone Mountings

### A CRYSTAL MICROPHONE AT LOW COST

Well, you are thinking about xtal mikes, eh? And if the 2B. carbon has gone sour, or you are tired of the hiss, batteries, or expense of repacking it, or just want to fiddle, why not try a Brush xtal earphone. It will be cheaper from many angles, and the result is sure-fire; the frequency response is more than ample, and the results have more than pleased yours truly.

As this is not a new idea by any means, we will not go into it very deeply, except to say that if you put it into a cowl lamp, tail lamp or bike lamp, be sure to pack it back and sideways with some good soundproof wadding. Kleenex was used here, same being filched from the XYL's war paint bench, and also place one sheet over the face of the earpiece and lock it in place with a spot of glue or nail polish.

There are so many types of lamps that it is difficult to pick up the ideal one, but after you have made up your mind, buy it, remove the glass and put in a brass or nickel-plated screen of about  $\frac{1}{8}$ " mesh and belly it out in the centre to a point where it harmonizes with the contour of the original glass, and if you have a lamp off a Hispano-Suiza or Rolls-Royce, my friend, you have a smart-looking xtal mike. The screech amp. in this case is a 57 resistance-coupled to a 56, transformer-coupled to a 45, which in turn drives a pair of 46's, Class B. The gain with this set-up is not turned up more than half way to 100 per cent modulate, 70 watts input at a distance of 10", speaking in normal voice. As you know, one side of the mike goes to ground. Try each side of it first before sealing it up, as sometimes one side is better than the other. And the other side, of course, goes to the grid of the 57 tube through a 1 mfd. condenser.

—VE3AKT.

### TYPE F1 MICROPHONE MOUNTING

Having made a discovery in regard to single-button mikes which seems to be working out very well, it seemed to me that it might be of advantage to some of our brothers with a lot of enthusiasm for fone and a lot of headaches as to where the legal tender is to come from. I naturally thought that I had made a new discovery, for I had never heard of the particular device being used before,

but on passing the information on to our good friend VE3BD, I learned that while my application was new, the device was known to the ham fraternity—from whom nothing is hidden for long. I am referring to the new type of transmitter that is used by one of our telephone companies in the relatively new Uniphone handset.

The old mike at my shack was a double-button affair by Shure, but due to reasons of non-ownership and its presence being required in other fields, a night was chosen when I had a sked, no less, for it to pay final respects to its old haunts, and out it went without much ceremony. Having a Uniphone in the shack, I decided to try it out and found that it was not too bad, but had the usual metallic tinniness and didn't impress me very highly in the monitor. The transmitter was set up for carbon button input to the speech lineup, so at the time, at least, I wanted to stay that way and started to do some thinking about that type F1 transmitter unit that is used in the handset mentioned. The outcome was an idea that by floating the unit in sponge rubber, the quality might be raised to a standard plenty good enough for communications, and this was therefore skedded for a tryout at the next opportunity which had to be soon, since the xmitter was off fone for the time being.

Looking around for a method of mounting, I spied an old desk-stand that had been around for years and began to see where that button would fit in there with ease, so, out comes the old innards with the exception of the stem and terminal strip which holds the outfit together. Off comes the mouthpiece, as this would not be needed, and there we have the skeleton case.

There is a raised portion of the unit (F1) in front which is perforated, and this is about  $1\frac{3}{4}$ " in diameter, so the front cover of the old stand was turned out to this diameter and the rough edges taken off. Next was the securing of a bath sponge of rubber of the 15-cent variety and with a sharp knife was cut approximately  $\frac{1}{2}$ " thickness; ring of the same material about  $\frac{1}{2}$ " square and about 2" inside diameter, and another ring about  $\frac{1}{4}$ " x  $\frac{3}{4}$ " x 3" in diameter. This stuff is hard to cut, but with some patience can be done all right.

The assembly was as follows: The original tinsel wires were soldered directly to the proper places on the unit, which has no terminal screws, and the wires were fed down through the regular

holes in the stand to the terminal strip inside, but before pulling them tight the 3" disc was slit from the centre to the outside edge and this was placed over the wires and the assembly pulled back into place rather gently. Next came the 3" ring, which was placed over the outside of the unit around its rim, and then came the front ring which was to keep the unit from touching the back of the front cover.

After this was all done the cover was put in place and the unit was reassembled with the necessary mike cord to the terminal strip, and the unit was tried out on a Sunday when the band was clear in the morning and when it would not hurt to have the carrier on for the odd bit of testing.

One would be foolish to say it is as good as crystal in quality, but I have had fellows express surprise that it was a single button and have said that they thought it was xtal until I had told them.

After using this for some days, the appearance of the hole from which came the old switch hook did not enhance the attempted factory appearance of the job, so, out it came again and a toggle switch was installed, the extra part of the hole being filled in with a piece of brass soldered into place.

By the time the job had been liberally treated to a coat of crackle finish, and had been reassembled, it was very passable in appearance.

Last Sunday, I obtained the co-operation of VE3ALT in operating the rig while yours truly went to his place to listen, and can now say that if the writer ever gets another mike, it will be only because no ham is ever satisfied until he has tried them all out at least once. The gain is tremendous as compared with the double-button job and the sensitivity is excellent.

The use of sponge rubber in the assembly certainly does wonders in taking out those harsh metallic sounds usually heard on the ordinary fone.

This is being written in the hope that some of the chaps who cannot spare the price of a xtal mike, or who want more gain without extra tubes, will find this one of the answers.

—VE3AGG

Although their membership expiry dates are still some time away VE5DY, VE5PI, and VE3AHZ have renewed their membership in the association for another year. Thanks fellows! It's just such a thing as this makes work for the VE Ops a real pleasure.

## Activity Survey

At the February executive meeting a statistical department was created to compile material relative to amateur radio in Canada. Conclusions based upon hearsay or personal opinion only are of little assistance in solving a problem or pointing the way to future progress. It will be the duty of this new department to secure all authoritative information available on Canadian amateur radio, and for the guidance of officers and members in deciding any contentious question it shall advise them of whatever relevant material they have obtained.

The first project is one in which all members can render valuable assistance, and we are confident, because of the many offers received, that they will do so.

The lack of a wider base than personal knowledge, on which to found an opinion, has caused many of us, when discussing the active percentage of licensed amateurs and the percentage using phone transmission, to project the conditions prevailing in our own respective communities into territory in which the same conditions do not hold. The VE Operators' Association, by a co-operative effort by its large and widespread membership, can make the above mentioned much-debated percentages matters of fact.

We ask all members to record the call letters of all VE's heard during the month of March, about the most active month of the year. Rule a sheet of paper into five columns, one for each call district, and enter all stations heard. Underline the calls of phone stations. When the most frequently used column is filled, start another sheet. At the end of March, send the lists to the secretary. The sheets will then be cut into strips and pasted together, and the master list made from the composite.

The accuracy of the result depends chiefly upon the co-operation given by members, and the importance of the information to be obtained should commend this survey to them. Make this department worth while by sending us plenty of lists from which to work.

—VE3ZE.

All members of the VE Ops. should find enclosed with this issue of XTAL a list of members as of Feb. 14, 1939. If any member's list is inadvertently omitted, drop us a line or send a message and we'll be glad to send you a copy. Please change VE3AG to VE3BG, and VE4AEM to VE5AEM in this list, and add the following new members: VE1JC, 20B, 3PZ, 3QK, 4AMX, 4OP, 4QM, 5ADZ.

## Ultra-High Frequency News

By VE3PL

The writer is pinch-hitting for VE3ADO as the Walter Winchell of the ultra-high frequencies. The random notes that follow are limited to the news we can gather first and second hand, and of necessity deal largely with VE3 activity. If the club secretaries or leading U.H.F. experimenters in the various communities will send in notes on their local activity on these frequencies, XTAL will be glad to give them representative space. How about it, Montreal gang, and you VE5's out there? What's new on the ultra-highs?

In central Ontario the Buffalo stations are dx on 5 meters. W8RJ is the old stand-by, and is heard regularly in Hamilton and Toronto. Other Buffalo stations come through at times, and W8FQS, Niagara Falls, N.Y., has also been heard. The Hamilton gang is very enthusiastic on 5-meter work, and have established a special shack for this type of operation. Recently they had 3ADO over to describe his latest transmitter, and before Harry got away the boys had pumped him almost dry. VE3DC is QSO into Hamilton now, but is not getting out as well as his fb equipment should, due to a poor QTH. Doc is a great booster for the HK24. 3KM is going strong, QSO Toronto and heard in Buffalo. Other active stations in the Hamilton district are OJ, XZ, ZB, NH, MH, and AUD. Others are coming along, and may be fully active when these notes appear. In Oakville, VE3CJ is active, but St. Catharines or Thorold have not been heard from for some time.

The 5-meter band in Toronto is really getting a workout these days. Almost any evening two or three stations are heard going it strong. Local roundtables, which don't seem popular in the Queen City, are developing nicely on 56 mc. No doubt some of the stations are newly licensed phones who find 5 meters preferable to 160, but there is a good sprinkling of the "old-timers" who stay on the band for choice. ADO is not quite as active as formerly, but his c.c. transmitter, using an HK24 in the final, is putting out a smooth signal. In the near future Harry will be on with even higher power. The rest of us are struggling along with the modulated oscillator type of transmitter, although several are working on oscillator-amplifier jobs. Within the last six weeks the following calls have been logged: ADR, AGP, AIL, AIP, ANY, ATB, AXG, AXT, LI, KV, OZ, PL, and ZF. LI and AXG are Ottawa

hams down here in pursuit of higher learning or something. KV reports temporary success in clearing up the squealing super-regenerative receivers, but others are taking their place, and the campaign has to be revived. The Toronto gang is greatly interested in the opening of the 2½ and 1¼ meter bands.

The only other centre from which news is available is Ottawa, where AJB, PD and MX have been operating occasionally on five. AWF, the mellifluous voice of 75 meters, is flirting with the idea of an MOPA on five. He has a swell location for the job. What's happened to VO, who used to be the one to keep the 5-meter pot boiling?

Now, gang, if we have omitted or misspelled calls, or ignored localities where activity is hot, just write in and give us the very gehenna, and we'll do better next time.

## February Meeting Minutes

The nineteenth regular meeting of the charter members of the Association was held at the home of VE3GT on Feb. 1. As a quantity of the February issue of XTAL still had to be mailed out, the meeting was not called to order by the president until 9.20 p.m. Those present were VE3's WK, VA, PL, ACI, APS, ZE, VD, RF, GT, and SG.

VE3APS, GT, SG, and VD were appointed a committee by the president to reply to the circular letter of the C.G.M. re suggestions to Ottawa for 1939-40.

ACI moved and PL seconded that the committee suggest to the C.G.M. that the oblique stroke be sent after a call when the call was being used portable, instead of the present rule of the word "portable." Carried unanimously.

PL moved and VA seconded that the committee pass on to the C.G.M. the suggestions that the association is in favour of having the 2½ and 1¼ meter bands assigned to amateur services, and also that the 400 mc band be retained by the amateurs. Carried unanimously.

VE3VD was appointed international secretary to look after all matters of international nature pertaining to the association and XTAL.

ZE moved and GT seconded that the association should form a statistical department. Carried unanimously. The chair then appointed ZE as chairman of the new department.

## Members' Activity Reports

VE4QZ reports for the Saskatoon gang. He and 4AMQ are on 7 mc. nearly every evening and are the only ones on that band consistently. 4FD, UD, and BF are the busiest on 14 mc. and UD and BF can also be found on 3.5 and 28 mc. now and again. 4IQ is also on 14 mc. when he can. 4AMQ got YV1AK in the A.R.R.L. members' party, his first YV. 4QZ also reports a three-way on Jan. 13 with W9FB (Amos) and W9HPQ (Andy), and got a kick out of going back at them: "R fb Amos and Andy." They were not the famous radio ones, however. 5HR has "WAVE" except P.E.I. on 14 mc., and is looking for VE's on Wed., Sat. and Sun. each week on 28 mc. from 2 to 4 p.m. P.S.T. He reports VE1CO coming in often on phone and cw. but cannot snag him. 3KE has a different rig, using 59 C.C.O. (broadcast band), 53 first and second doublers, 53 third doubler, and an 807 Jr. final with 22 Watts input. Revr is 12-tube home-made with 2-tube preselector. Note his score in B.E.R.U. tests. 4OB is 52, and uses 6L6 and P.P. 6L6's and is located at Flin Flon, and we understand is sometimes known as "The Old Grasshopper." 3AWA, Chesterville, desires sked with Kirkland Lake, preferably 8-9 a.m. 3ARG, Sudbury, is looking for the odd sked and is on 7004 kc. every Sunday afternoon. 3GU has pair 100TH's modulated by 203's on 14 mc. AXE with 6L6-809 on 14 mc. AQQ with 55's on 7 and 14 mc. ARG has 6F6, TZ20, PP T20's on 7mc. All these four are in Sudbury. 3JT is with the Department of Transport Air Services at Kapuskasing. We got a request from a W9 who wanted to know what the nine Canadian provinces are (hi). 5DZ is a customs examiner at the Port of Pacific Highway at the international boundary and especially requests any motoring easterners to look him up next summer. 3AU is at Ottawa with the standard frequency services and says they have no less than eight HRO's. Oh me!! Many thanks to 5DY for the complete news on Victoria, B.C., activities. 5UL sold his phone and is on again with pair 45's SE. 5AGJ is newest ham in Victoria, 638 Victoria Avenue. 5SW got his first Esthonia and Norway contacts, and played checkers simultaneously with UD, PT and RS. 5ACK's new rig about ready, using a 35T. 5EK is rebuilding. 5RB got a heard 7 mc. card from Germany, then sold his rig for a motorbike. 5EC

worked Howland Island. 5SO bogged down by neutralizing trouble. 5ADY has new "Q" antenna. 5ID has taken over SW's end of Trunkline "I". An open window, a storm, and 5AAM's new Howard revr is trying to dry out. 5PO just got back from U.S.A. and immediately left for Revelstoke. 5FW testing low power with 5CC in Chilli-wack, and now down to ½ watt on peanut tube on cw. 5ABU is on 75 and soon hopes to be on 20. 5DV is building super and expects to try 10 phone soon. 5EZ will answer all QSL's received. 5AAO has come to life. 5ADL finds 807 likes 300 to 600 on the screen. 5AIY put up new antenna. 5TZ getting 30-watt phone for 75. 5ABV going to try low-power e.c.o. 5AGN is fooling around with e.c.o., too. 5PI admits being on five times this year, or was it 1938? 5AAH after dx with low power. (Aren't we all?) 5UO WAC'ed in 24 hours with S9 reports and WBE in same 24 hours. 5AAE is going after commercial second. 5PT has 52 points towards Century Club. 5NF is on 1340 kc. in Dawson, Yukon. 3GT finished the B.E.R.U. tests at 7 p.m. and had the complete rig unsoldered at 7.22, in spite of bagging two new countries, VQ2 and ZD4, as well as a VK6. 3KP certainly bowled them over in the B.E.R.U. 3XQ has a rotary beam for 14 mc. 3RW is trying to get on 160. 3AJS and AAR have an 9JK beam for 56 mc. and are patiently (?) waiting for the band to open up a little. The only station heard of late being AOP across town of Belleville.

VO2N of Grand Falls, Newfoundland, was a visitor this month to many VE hams in the maritimes, to VE2CP, the McGill University station at Montreal, and VE3AKT at Toronto, from whose station he worked VE4EO in Lethbridge, Alta., and also his home station VO2N, where he conversed with his xyl. Dick says the western Canada stations come into Newfoundland about the same strength as Europeans do. He also hears numerous VE5's on the 20 metre band. "Czzy." VE3AKT, has been working some nice dx while not busy making special transmitting relays and turning out mike stands for the boys.

Did you know 3ADV, DX Editor, used to be 4KF?

Congrats. to Mr. and Mrs. 3ADB on arrival of a prospective VE Op.

## Club News Reports

The March meeting of the Wireless Association of Ontario will feature an address and demonstration on "Resuscitation from Electrical Shock," a subject of special interest, now that the danger of electrocution is being more fully realized by the ham fraternity. The guest speaker will be Sergeant R. P. Miller, of "A" Corps Signals, R.C.C.S., a qualified first-aid man of the Bell Telephone Co. Time and place: Friday, March 10th, at Radio College of Canada, 863 Bay St., Toronto. Visitors always welcome.

The newly elected officers of the Royal City Amateur Radio Association are: Pres., VE5QN; Vice-Pres., VE5AEZ; and Sect.-Treas., VE5APL. VE5IA was elected club representative to the VE Ops, as he carried on correspondence with them during the past year. A new feature is a special weekly night for code practice. This takes the place of the former night when only about half an hour was available. The special night affords two hours of practice. They now have an A.C. generator to be run off a car, and anticipate the arrival of spring and the annual field day outings. Meetings of this association are held every other Monday night at the Y.M.C.A. at 8.00 p.m. The next meetings will be March 6 and 20. They are striving for 100% membership in the VE Ops.

The Victoria Short Wave Club held their tenth annual banquet on Feb. 4, with 101 members and guests present. Visitors included W7EKA of Seattle, VE5RV and EN from Vancouver, VE5BL from Parksville and VE5IP of Campbell River. Forty of those present were licensed hams. Also attending were W. I. Bowerman, District Supt. of the Department of Transport, Radio Branch, and Lieut. A. Miller, District Signal Officer, M.D. No. 11. A presentation was made to the parents of VE5EC for their kindness in extending their home for the use of the club and the club station, 5EZ, during the past six years. VE5HR was presented with the Burrows' Cup for the second successive year. VE5EC was second in the cup contest, and has interlocking switches on the doors of his xmtr. All the guests and members wore large cards with their first names (and calls, if any) under penalty of a fine for using other names in addressing one another. The president, 5DV, presided, and 5PO was M.C. Announcement was made of "The Elu-

sive QSL Contest." Commencing immediately, it will run for a year or until conditions shall be fulfilled. A prize of \$10 will be given the first member to work Newfoundland, P.E.I., South Carolina and South Dakota, and furnish QSL's as proof. Thanks were especially given to 5FW and 5PO for their hard work in making the banquet and meeting such a success. The V.S.W.C. station, 5EZ, was on the air during the VE Contest for 33 hours continuously, being manned by VE5's AIM, ABV, ADL, DV, AGN, AAH, IC, and DY. 5IP showed the gang at the banquet the B.C. Forestry Department's portable phone rig.

### DX CONTEST

The February issue of QST carries the announcement of the annual A.R.R.L. dx contest. Operation on 160 and 80 metres is barred this year. The contest periods are from 0001 G.M.T., March 4, to 2359, March 12, for code, and from March 18 to 26 for phone. VE Ops not members of competing local A.R.R.L. affiliated clubs should mention VE Operators' Association membership on their logs to be eligible for the club awards.

### "WHAT DO YOU TALK ABOUT?"

(Continued from page 1)

of amateur radio, and no man is poor who is rich in friends.

The development of those friendships will lead us to an appreciation of the fact that the individuality which marks a man's brass-pounding fist is very personal indeed, and will be as pleasing to hear as is his person to behold when he approaches our house. We are glad to have him drop in for a friendly little chat; we should approach a QSO with the same pleasant anticipation. If we have a proper valuation of our hobby, we shall derive a friendly thrill from hearing those characteristic dots and dashes of his.

Fellow hams, if that is our reaction to the use of our equipment, we are really justifying our participation in amateur radio, and we are extracting all the pleasure and enjoyment it has to offer. If, on the other hand, we have not advanced to the point where we say 73 with reluctance, our perspective is probably wrong, and perhaps we should hesitate long enough to ask ourselves, "What do you talk about?"

## B.E.R.U. Tests

Conditions during both the senior and junior B.E.R.U. tests were quite different than experienced in these dx contests for many a year. For the most part conditions were very erratic, and skip varied rapidly, and was exceptionally long. On 14 mc in Toronto, VU2LK and XZ2DY came through from 6 a.m. E.S.T. until around 9, and at times reached a peak of S8, but as far as we are able to learn were not worked by any Torontonians. These were certainly the most consistent Asian stations. Nearly every evening up until 1 a.m. the African stations came in with fine strength, and many were worked. As Africa faded out, New Zealand started to come in, and came through well for about an hour, when they started to fade, followed by increasing strength from the Aussies. The ZL's and VK's came in again from 7.30 to 10 a.m. E.S.T., and VE3GT worked one as late as 9.50 a.m. The British Isles stations were few and far between during the greater part of the tests, and very few were heard, although the VE5's had a "field day" working them, VE5HR bagging no less than 10 G's on Feb. 4, six of them in one hour. While this was happening the VE3's could hear both the VE5's and the G's, but were unable to raise either for some reason.

VE3KE worked 7 Africans, 11 ZL's, 8 VK's, 10 G's, had a total of 47 QSO's in the senior test for a score of 579. In the Junior he worked 15 G's, 7 VK's, 5 ZL's, two Africans, had 35 QSO's for 393 points, all contacts in both tests being made with 22 watts input to an 807 Jr. 5HR had 17 QSO's in the senior, 10 being with G's. 3VN scored 235 points from ZS, ZD, VK, ZL, VP1, G, and VE QSO's. 3GT got two new countries, ZD4 and VQ2, and worked his first VK6, while only scoring about 150 points in each test.

On Friday, Feb. 11, during the senior tests, 3KP bagged 15 VK-ZL stations in one hour and a half. The next night he got 8 ZS-VQ stations, and two more the following afternoon.

### ARE YOU A VE OPERATOR?

If so, and whether your interest lies in dx, traffic, or rag-chewing, the VE Operators' Association solicits your membership. The annual dues are only \$1.00 per year, and that includes every issue of XTAL, as well as privileges extended by the R.S.G.B. and the A.R.R.L. to members of affiliated societies.

## Biography

### VE9AL (3AL PORTABLE)

A. H. Keith Russell's first amateur radio interest dates back to 1908, at which time he built a galena detector and spark coil, followed later by a Clapp-Eastham ½ k.w. rotary quenched gap.

After graduating with B.A. from University of Toronto, in 1915, he joined the navy as a wireless operator, was assigned to transatlantic station at New Castle, N.B., on interception work till 1917, from where he was transferred to the Royal Naval Air Service. Trained at Royal Naval College, Greenwich, at Vendome, France, and at Lee-on-Solent, England. Qualified as pilot, and sent on active service with submarine patrol to Taranto, Italy, till end of war, 1918.

Returning to Toronto in 1919, he entered Osgoode Hall as law student, and graduated in 1920, and has been practicing law ever since.

Keith recommenced amateur radio in 1919, and has operated VE9AL, with portable VE3AL, since that date.

In the same year, he became C.G.M. of A.R.R.L., and held that position for several years, was also radio inspector (part time) for Department of Transport.

In 1932 he became officer in No. 10 Squadron, R.C.A.F., Toronto, and became squadron leader in command as of Oct. 1, 1938.

He is president of Toronto Flying Club, and of Canadian Flying Clubs Association; also vice-president of Empire Life Insurance Co., married and has three children, two boys and one girl.

VE9AL now resides in Forest Hill Village, where he was reeve for several years.

Present transmitter at VE9AL is 500 watts to a pair of RK38's p.p., modulated pair of 805's, and operates on 80, 40, 20 and 10 metre bands.

### QSL's FOR VE5's

In addition to most of the VE5's whose calls were in last month's list, VE5HR has cards for the following: ACH, AEC, AEZ, AFV, AFZ, AIE, AIK, AIL, AIU, AK, BK, BW, DU, EF, ER, GD, HS, JD, JJ, NY, OE, SR, UI, UN.

Letters expressing views on any phase of amateur radio are solicited for publication in XTAL. Letters should not exceed 200 words, and should be addressed to the Editor.

## Up-to-the-Minute DX News

by VE3ADV

Starting this issue, we are devoting this column to current dx, and we'd like all you fellows to send us the dope by the 10th of each month. Anything interesting at all is very welcome, dx worked, heard or even heard of, and general operating conditions on any of the ham bands. Suggestions also will be appreciated as we want this to be up to date so that it may be helpful to fellows wanting to work new countries. Particulars, such as frequency, phone or code, and tone characteristics will also be of value.

Send your reports to association H.Q. or to the writer, c/o Bank of Montreal, Belleville, Ontario.

Now for the news.

**3.5 mc.** Conditions have been fair and quite a number of Europeans have been heard, though only one report of a QSO is to hand. VE3AMP succeeded in working D4TFU on 3,555 kc., T9 with 80 watts input. This band could bear a little more attention on the part of dx stations, as good QSO's can be had frequently, and fellows on this band will often ragchew.

**7 mc.** Seems to have pepped up considerably the last month and world-wide dx stations are audible, especially Europe, which comes through in good style between 11 p.m. and 3 a.m., E.S.T.

VE4QZ (Saskatoon) sends us a nice list of stations heard, including YV1AK or YV5ABQ, (both the same station, 7062 T9), HH3L, (7070 T9), G6CJ, (7060 T9x), G2PU, (7080 T9x), HB9CE, (7035 T9x), J3FZ, (7090 T9), TI2FW, (7100), and stations worked CE2BQ (7040 T4: he listens on his own frequency most of the time), VP5JB (7060 T6), and K5AY. CE2BQ and G2PU have been very consistent. The Australasians, too, have been good, with K6, K7, VK and ZL audible most of the dark hours.

**14 mc.** the old dx standby, while it has dropped somewhat, still produces the stuff, and all continents have been fairly good. Europe starts coming in soon after noon here in the east and lasts through till 6 or 7, when QRM blots things out. VE3AEW reports several G and F contacts in the early afternoon and also worked were HCAC (14290 T4: has any one of the most consistent VE stations K7FLP (14282 T9x) for the Alaskan's first VE3 and 3AEW's first Alaskan.

VE4OB came through with VU2FX (14340), worked at 0430 G.M.T. The VU is looking for VE1 and VE2 contacts, so hams, here's a chance for WAC, WBE and a new country to boot. VE5KL worked FP8AA, who says he can hear only S7 signals or better owing to static, and promises to QSL. Sounds a good one. VE5EC worked a KF6 on Howland Island. We don't know who the station was, but it's a good one to watch for, as is LU4DJ worked on phone from VE3XQ. The LU uses 40 watts to a portable rig and comes in fb in excellent English. He is looking for more VE contacts. So is ZS2AC (14375 T9 worked at VE3ADV), and he reports VE4RO one of the most consistent VE stations down there. VE5NF, with 200 watts, is on 14340 and a musical T7 note (wkd. at 3ADV), and is located at Dawson City, Yukon, and looking for dx. VE2FC reports first dx he has had during the B.E.R.U. tests.

VE3ADV received a very handsome bunch of QSL's from XSVISM, so if you have contacted him don't despair, but send a card via LU2CW and you'll probably get one back OK.

**28 mc.** No actual dx reports are to hand, but conditions do not seem good for 10 at present and only North America and a few Europeans have been heard here. Please let us have your dope on this band.

Now, gang, how about those reports? We must do better next issue, so jot down those dx stations worked and heard, with their frequencies, and drop us a line. We are interested, and so are all the dx men, in your contacts and results. Especially we want news from VE1, VE2, and VE5.

### Toronto Notes

Dx conditions on 20 metres are better this month. Europeans are rolling in quite well. Most consistent stations seem to be G2DV, G2VG, G3BM, PA0ZM. VE-5AEJ in Vancouver comes through on phone very regularly in the east. ZS6DY, in Johannesburg, South Africa, has been working VE stations frequently during the past month. A dandy empire dx station reported on 14,120 kc is ZP6AP in Palestine, on phone. FI8AC has been heard also. He is located in French Indo-China. Nearly everyone on the band in the early mornings has been calling a PK4 station in Sumatra, a Dutch

colony. Have any VE stations worked him or know his frequency?

At the close of the recent VE Contest, after 3 a.m. E.S.T., the G stations were rolling in on 40 metres about 6 to 8, and plenty of them, too. This band should be well to the fore when it comes to DX Contests.

The following stations have been heard on 40, between midnight and 3 a.m. E.S.T.:

GW5LV, 7143; VK2SS, 7064; K6ONF, 7120; ONZ4UL, 7153; I1MQ, 7100; ZA7X, 7120; ONZ4UL, 7153; I1MQ, 7100; ZA7X, 7126; D4PGD, 7103; ZL2MM, 7116; F8NP, 7125; G3FP, 7108; F8PC, 7200; ON4GI, 7133.

**Note for "WAVE" chasers.**—Some of those elusive Prince Edward Island stations that have been snagged since the first of the year, are:—VE1GH located in Charlottetown. He is on 20-metre phone, and is testing a transmitter which will shortly appear with the call VE1HI, which will also be in Charlottetown. VE1BZ is also active on 20-metre phone, as is also VE1CO. These stations all appear on the low-frequency end of the band. VE1EY in Charlottetown is heard and worked, around 3760 kc. on c.w.

### SKEDS AND TRAFFIC

A very successful trans-Canada phone network has been operating for several weeks on Wednesdays from 11.30 a.m., E.S.T. The stations included are: VO2N, Grand Falls, Nfld.; VE1FQ, Halifax, N.S.; VE1DQ, Halifax, N.S.; VE1CK, Fredericton, N.B.; VE2CW, Quebec City, Que.; VE3ADB, Mimico, Ont.; VE4SS, Winnipeg, Man.; VE4JV, Moose Jaw, Sask.; VE5AEJ, Vancouver, B.C. The frequencies range between 14115 and 14140 kcs. Each station was heard by all the rest. This shows what Canada could do should an emergency arise. Other amateurs who have participated several times are: VE3ST, Toronto; VE3AHA, Dryden; VE2CP, Montreal; VE4JJ, Lethbridge, and VE9HP, Toronto. VO2N has the distinction of being the YL of the network.

Coincidence: After a QSO on 20 metre phone with VE1DQ recently, VE3RF received a card from 1DQ informing him that the contact had been made on the tenth anniversary of their first QSO on 20 metre phone.

### Trans-Canada Air Mail Service

To our members who have been aiding us with editorial matter for past issues of XTAL, and to those who shall offer to do so in the future, we give below the schedule of Trans-Canada Air Mail Service between Vancouver and Toronto, effective March 1, and to operate daily. This new service will enable XTAL to receive more up-to-date information for publication from the west. You will note that you will be able to mail a letter during the day in Vancouver, Lethbridge, Regina and Winnipeg, and XTAL will receive same the next afternoon.

The closing dates for the April and May issues of XTAL are March 15 and April 12. This means mail may be posted in the West March 14 and April 11. The postal rates are six cents for the first ounce and five cents for each additional ounce, or fraction thereof.

The Vancouver-Toronto daily flight schedule is as follows:

Leave Vancouver	6.45 p.m.	PST
Arrive Lethbridge	10.20 p.m.	MST
Leave Lethbridge	10.35 p.m.	MST
Arrive Regina	12.40 a.m.	MST
Leave Regina	12.50 a.m.	MST
Arrive Winnipeg	3.40 a.m.	CST
Leave Winnipeg	3.55 a.m.	CST
Arrive North Bay	10.20 a.m.	EST
Leave North Bay	10.35 a.m.	EST
Arrive Toronto	11.50 a.m.	EST

As we go to press we understand daily flights will be made from and to Victoria from Vancouver to connect with the T.C.A. flights.

### QSL's

See January XTAL for dope on members' QSL cards.

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## New Amateur Station Calls

### Maritimes — VE1

AV—P.O. Box 562, Sydney Mines, N.S.  
 AW—C. H. Short, Armdale, N.S.  
 AY—D. H. MacLean, Bedford, N.S.  
 DK—A. H. Fulmore, Great Village, N.S.  
 DP—F. E. Haughn, St. Andrews, N.B.  
 EC—W. C. Trenholm, Grand Pré, N.S.  
 ED—H. C. Maclean, Hopewell, N.S.  
 EN—I. M. MacDonald, Stellarton, N.S.  
 FV—S. E. Frederick, Charlotte St.,  
 Sydney, N.S.  
 FY—E. J. Brown, Shediak Bridge, N.B.  
 GG—8 Astley St., Sydney Mines, C.B.,  
 N.S.  
 HP—126½ Cedar St., Halifax, N.S.  
 IV—P.O. Box 185, Mahone Bay, N.S.  
 JF—24 Broad St., Truro, N.S.  
 JG—46 Shirley Ave., Moncton, N.B.  
 JL—39½ Edward St., Halifax, N.S.  
 JR—91 Brookland St., Sydney, N.S.  
 KK—J. W. Hills, Berwick, N.S.  
 NE—13 LeMarchant St., Halifax, N.S.

### Quebec — VE2

EL—17 Kirk St., Farnham.  
 FX—97 Drayton Rd., Pointe Claire.  
 FZ—28 Huntingville Rd., Lennoxville.  
 JV—5189-4th Ave., Rosemount.  
 KB—590 Desaulniers Blvd., St. Lambert.  
 OA—1845 St. Luke St. W., Montreal.  
 PV—1384 Laird Blvd., Town of Mt. Royal.  
 PX—4886 Hingston Ave., N.D.G.,  
 Montreal.

### Ontario — VE3

AAY—H. H. Wood, R. C. A. F. Station,  
 Trenton.  
 ABJ—232 Welland Ave., St. Catharines.  
 ABU—48 Jean St., Port Arthur.  
 AEH—867 Pelisser St., Windsor.  
 AEU—187 Marion St., Toronto.  
 AFF—3 Rideau Ave., Toronto.  
 AFZ—A. R. MacMillan, Pickle Crow Gold  
 Mine, Pickle Crow.  
 AGY—1 Badgerow Ave., Toronto.  
 AIM—169 Strathcona Ave., Ottawa.  
 AIP—66 Ellis Park Rd., Toronto.  
 AIS—19 Woburn Ave., Toronto.  
 AJK—C. R. Rolling, Mount Albert, Ont.  
 AMM—89 Drummond St., Perth.  
 APJ—J. S. McKnight, Port Dover.  
 AQV—Governor General's Horse Guards,  
 University Ave. Armouries,  
 Toronto.  
 ASV—40 Tennis Cres. Toronto.  
 AUV—182 Indian Grove, Toronto.  
 AWW—1532 Rankin St., Fort William.  
 AYG—96 Gilmour St., Ottawa.  
 AYH—12 Grenville St., Toronto.  
 AXB—156 Cliff Crest Dr., Scarboro  
 Bluffs.

FU—1612 Dougall Ave., Windsor.  
 FX—192 Strathearn Rd., Toronto.  
 JN—122 Brisbin St., London.  
 MF—52 Millbrook Cres., Toronto.  
 PW—95 Lake St., Timmins, Ont.  
 VL—178 Elizabeth St., Barrie.  
 XF—583 Central Ave., London, Ont.  
 XT—85 Breadalbane St., Hamilton.  
 ZH—29 Woburn Ave., Toronto.  
 ZM—240 Cooper St., Ottawa.

### Prairie Provinces — VE4

ACH—H. W. Horne, R.R. 1, Excel, Alta.  
 AEW—565 Lipton St., Winnipeg, Man.  
 AFX—340-13th St. W., Prince Albert,  
 Sask.  
 AFZ—P.O. Box 212, Watrous, Sask.  
 AMV—11029-88th Ave., Edmonton, Alta.  
 APV—256-4th St. N. W., Medicine Hat,  
 Alberta.  
 AQA—P.O. Box 6, Boharm, Sask.  
 AQC—E. G. Eaton, Young, Sask.  
 AQD—358 Russel St., Brandon, Man.  
 AQE—63 Lennor Ave., St. Vital,  
 Winnipeg, Man.  
 AQF—199 Greenacre Blvd., Kirkfield  
 Park, Man.  
 AQG—T. McLaughlin, c/o Peace River  
 Airways Ltd., Peace River.  
 AQH—100 Main St., Flin Flon, Man.  
 AQI—E. W. Neufeld, White Fox, Sask.  
 AQJ—J. Penny, Hamiota, Man.  
 AQK—310 Douglas St., Brandon, Man.  
 AQL—G. E. Bean, Weyburn, Sask.  
 AQM—A. W. Harding, The Pas, Man.  
 AV—W. B. Green, Boharm, Sask.  
 BT—703-6th St. W., Calgary, Alta.  
 BZ—H. B. Snyder, Warner, Alta.  
 CD—S. Wright, Dewar Lake, Sask.  
 DI—485-3rd Ave. S., Weyburn, Sask.  
 GR—335 Dundas Ave., Swift Current,  
 Sask.  
 IH—2502-16th St. S.W., Calgary, Alta.  
 II—W. N. Gilchrist, Waskada, Man.  
 JZ—J. E. Deacon, Minnedosa, Man.  
 KN—226 Winchester St., Winnipeg, Man.  
 LE—327 Leighton Ave., Winnipeg, Man.  
 LW—1096 Spruce St., Winnipeg, Man.  
 MA—117-4th Ave. S., Saskatoon, Sask.  
 MO—P.O. Box 195, Zealandia, Sask.  
 NA—525-2nd Ave., Medicine Hat, Alta.  
 OA—2nd Ave. E., Vegreville, Alta.  
 OJ—451-3rd St., Brandon, Man.  
 OQ—W. N. Veale, c/o Landis Garage,  
 Landis, Sask.  
 PB—E. H. Nilson, Vulcan, Alta.  
 QJ—54-2nd Ave., Battleford, Sask.  
 QQ—P.O. Box 11, Tyvan, Sask.  
 RS—R. D. B. Sheppard, Primate, Sask.  
 SZ—11230-95A St., Edmonton, Alta.  
 TK—229-6th Ave. E., Calgary, Alta.  
 TT—J. W. Christopher, Sheerness, Alta.

TW—334-8th St., Saskatoon, Sask.  
 UO—12408-113th Ave., Edmonton, Alta.  
 VL—A. H. Hunter, Fire Hall, Cor.  
 Saskatchewan Ave. & Tup-  
 per St., Portage La Prairie.  
 VP—M. Hallman, Dahlton, Sask.  
 VT—412 Bignell Ave., The Pas, Man.  
 WY—1289 Wolseley Ave., Winnipeg.  
 XH—45 Inman Ave., St. Vital, Winnipeg.  
 XV—442-13th St. W., Prince Albert, Sask.  
 ZJ—262 Athabasca St. E., Moose Jaw,  
 Sask.

### B. C., Yukon, N.W.T. — VE5

AAV—E. J. Leclerc, Merry Island, B.C.  
 ACS—The University of British Colum-  
 bia, Radio Operators' Assoc., Vancouver  
 ADV—3991 Willingdon Ave., Burnaby,  
 B.C.  
 AEV—2094-5th Ave., Trail, B.C.  
 AFV—N. C. Gansner, Sheep Creek, B.C.  
 AGV—A. H. Hansen, Holberg, B.C.  
 AHV—P.O. Box 360, Fernie, B.C.  
 AIV—3649 W. 5th Ave., Vancouver, B.C.  
 CG—534 E. 6th Ave., Prince Rupert, B.C.  
 CS—P.O. Box 276, Penticton, B.C.  
 CZ—2956 Grant St., Vancouver, B.C.  
 DC—5612 Ormidale Ave., Vancouver, B.C.  
 HI—3430 Franklin St., Vancouver, B.C.  
 HN—H. E. Roe, R.C. Signals Radio Sta-  
 tion, Fort Resolution, N.W.T.  
 NJ—803 Victoria St., Nelson, B.C.  
 OG—G. J. Greatrex, Port Coquitlam, B.C.  
 TF—1916 Turner St., Vancouver, B.C.

### SWAP COLUMN

Several members have suggested that a Swap Column would be of interest and service to the members. Following these suggestions XTAL has decided to carry such a column even though it may mean the loss of some little revenue from the Ham-Ad column.

This column will be restricted to bona fide swap offers, and will not carry disguised Ham-Ads. 3AAR suggests: "I would just about give my hind leg for a power supply to use in the car for portable work, about 300 volts at 150 mls. To go out and buy one is out of the question, and yet perhaps someone has one who is not using it and I might have his heart's desire down here in my store room." AAR is in the radio service business in Belleville.

Two or three members mentioned that xtals might be swapped through this column. A lot of us have xtals we don't use very often that we might swap, have we not? Have you anything you'd like to swap? Let's hear from you before March 15, for the April issue.

### VE3KP

VE3KP, owned by G. A. Threader, and located at St. Catharines, has been on the air since 1920 and is one of Canada's foremost DX stations. Whenever there is a DX contest, or whenever DX can be heard, one is apt to hear many foreigners working VE3KP. He has a nack of hooking them. He is WAC and WBE and has 84 countries to his credit.

The layout is nothing exceptional, being just the usual ham layout, and in this case entirely home-made from the crystal in the S.S. Super to the 65 foot lattice mast in the backyard, which supports his beams. One advantage he does have however, is the location, where back-ground and auto noises do not interfere greatly. The Transmitter starts with a 6L6G oscillator, E.C. or XTAL crystal, then a pair of 6L6Gs in P.P. as doublers (grids in P.P. and plates in parallel) driving a single 203A final, with an input of 200 watts as a maximum. He has never found it necessary to increase power beyond that point to work DX heard. The antenna for Europe, Africa, and Oceania is an 8JK single section flat top beam. The other for South America and Asia is a matched impedance affair two half waves in phase. Provision is being made to make the 8JK rotatable from the shack.

He has two 203As, both fifteen years old and still going strong. They originally cost \$35.00 each, and he uses one for about a month and then the other, finding no difference between the two. He claims they have certainly paid for themselves in miles per watt per dollar many times over. Also in their day they have seen some extra hard usage.

Please refer to the BERU column for an example of how 3KP gets out even in these days of QRM and keen competition.

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Variable Frequency Unit A Cut 80 Meter Band only..	6.45

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### The Letter to C.G.M.

Replying to the letter from Mr. Reid, C.G.M., A.R.R.L., printed in last issue XTAL, the association made the following recommendations:

1. That the association was in favour of requesting that the 224-230 mc. band be assigned to amateur services.
2. That the association proposed the amateurs in Canada be allowed to retain the 400 mc. band.
3. That the association proposed that when a Canadian amateur station is authorized to operate portable that the oblique stroke followed by "P" be sent as part of the call, in place of the present ruling. The association felt that there was no need to sign a call with /VE2, or /2, as an alternative, because a station can only operate in the province to which his call has been assigned.
4. That as an alternative, should the Department be willing, when a station is granted permission to operate portable, the station's call may be used regardless of the province in which the station is located, similar to the ruling in the United States. In other words, if VE3ZE was operating portable in Quebec, he should sign his call VE3ZE/2. The association felt it was in the interests of the older amateurs that they be permitted to use their calls in any part of Canada, because it had been noted of late that several old-timers who had moved away for a few months, returned to find their calls reissued to some newcomer, as well as being obliged to use a new call themselves while residing in another province.
5. That, instead of the items as outlined

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in No. 4, the association proposed the easiest solution might be that the department give consideration to withholding for a period of one year, calls that had lapsed for any reason.

# BLILEY CRYSTALS

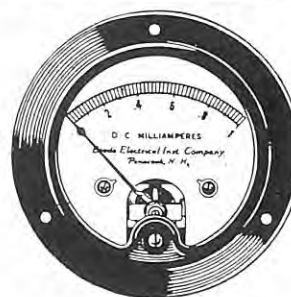
10-20-40-80-160  
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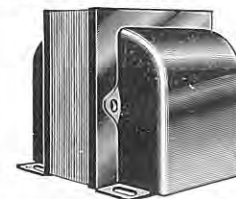
Model	Description	No. on hand
701 0-	1 D.C. Amps; 3 1/2" metal case....	3.32 2
701 0-	10 D.C. Amps; 3 1/2" metal case....	3.32 1
701 0-	15 D.C. Amps; 3 1/2" metal case....	3.32 3
701 0-	5 D.C. Mill; 3 1/2" metal case....	3.32 1
701 0-	10 D.C. Mill; 3 1/2" metal case....	3.32 3
701 0-	25 D.C. Mill; 3 1/2" metal case....	3.32 3
701 0-	50 D.C. Mill; 3 1/2" metal case....	3.32 4
701 0-	500 D.C. Mill; 3 1/2" metal case....	3.32 2
312 0-	5 D.C. Mill; 3 1/2" Bakelite case	3.72 1
312 0-	10 D.C. Mill; 3 1/2" Bakelite case	3.72 1
312 0-	15 D.C. Mill; 3 1/2" Bakelite case	3.72 2
312 0-	25 D.C. Mill; 3 1/2" Bakelite case	3.72 6
312 0-	50 D.C. Mill; 3 1/2" Bakelite case	3.72 4
407 0-	10 A.C. Mill; 2" Metal case....	2.60 2
407 0-	15 A.C. Mill; 2" Metal case....	2.60 1
411 0-	10 D.C. Mill; 2" Metal case....	2.60 5
411 0-	15 D.C. Mill; 2" Metal case....	2.60 2
411 0-	25 D.C. Mill; 2" Metal case....	2.60 7
411 0-	300 D.C. Mill; 2" Metal case....	2.60 1
411 0-	500 D.C. Mill; 2" Metal case....	2.60 1
701 0-	5 D.C. Volts; 3 1/2" Metal case....	3.32 2
701 0-	200 D.C. Volts; 3 1/2" Metal case....	4.18 3
701 0-	1000 D.C. Volts; 3 1/2" Metal case....	8.68 2
717 0-	5 A.C. Volts; 3 1/2" Metal case....	3.32 1
717 0-	8 A.C. Volts; 3 1/2" Metal case....	3.32 2
717 0-	750 A.C. Volts; 3 1/2" Metal case....	13.94 1
411 0-	3 D.C. Volts; 2" Metal case....	2.60 2
411 0-	5 D.C. Volts; 2" Metal case....	2.60 1
411 0-	200 D.C. Volts; 2" Metal case....	3.48 1
407 0-	15 A.C. Volts; 2" Metal case....	2.60 1

### USED METERS

These are meters that we have removed from obsolete trade-in test equipment. We guarantee each and every meter to be exactly as new for accuracy and performance.

Model	Description	No. on hand
301 0-	1 Mill D.C. Weston; 3 1/2" Metal case	5.00 1
301 0-	5 Mill D.C. Weston; 3 1/2" Metal case	4.50 1
301 0-	15 Mills Weston; 3 1/2" Metal case	4.50 1
301 0-	50 D.C. Mill Weston; 3 1/2" Metal case	4.50 2
591 0-	80 D.C. Mill Weston; 3 1/2" Metal case	4.50 2
531 0-	15 D.C. Mill Hoyt; 2" Metal case	2.50 2
566 0-	25 D.C. Mill Hoyt; 2" Metal case	2.50 1
566 0-	150 D.C. Mill Hoyt; 3" Metal case	3.32 1
566 0-	200 D.C. Mill Hoyt; 3" Metal case	3.32 1
531 0-	300 D.C. Mill Hoyt; 2" Metal case	2.50 2
566 0-	300 D.C. Mill Hoyt; 3" Metal case	3.32 1
506 0-	10 D.C. Mill Weston; 2" Metal case	3.00 2
506 0-	3 D.C. Volt Weston; 2" Metal case	3.00 4
301 0-	7 D.C. Volt Weston; 3 1/2" Metal case	4.50 1
401 0-	7 D.C. Volt Beede; 2" Metal case	2.00 1
301 0-	500 D.C. Volt Weston; 3 1/2" Metal case	6.00 1
301 0-	15 A.C. Volt Jewel; 3 1/2" Metal case	4.50 1
531 0-	15 A.C. Volt Hoyt; 2" Metal case	2.50 1
476 0-	750 A.C. Volt Weston; 3 1/2" Metal case	10.00 1
301 0-	8 Amps R.F. Jewel; 3 1/2" Metal case	7.50 1
361 0-	3 Amps Hot Wire Hoyt; 3" Metal case	3.00 1
362 0-	5 Amps Hot Wire Hoyt; 3" Metal case	3.00 1

### PHILCO POWER TRANSFORMERS (Canadian Jefferson)



Here is a real buy for dealers in 60-cycle districts. The two models listed will fill your replacement needs on all receivers using 6.3 volt tubes. All transformers are brand new. A real buy.

Philco No. 6804 Power Transformer 95 watts.  
700 volts C.T. at 140 M.A.

6.3 volts at 3.75 amps. 5.0 volts at 2.0 amps.

Size 4x4" base; 5 1/4" high; vertical mounting (illustrated). Weight 8 lbs.

Philco List, \$7.25. Your cost, \$1.75.

Philco No. 32-8381 Power Transformer, 54 watts.

680 volts C.T. at 65 M.A.

6.3 volts at 2.2 amps. 5.0 volts at 2.0 amps.

Size 3 1/2"x3"; 2 1/4" above chassis, horizontal mounting. Weight 3 1/2 lbs.

Philco List, \$5.25. Your cost, \$1.10.

### PHILCO REPLACEMENT CONDENSERS

All metal cased units in metal can with mounting tabs. Easy to mount under chassis, and are ideal for general replacement work.

8x4 mfd, 450 W.V. Dry electrolytics in rectangular can 2 5/8" long x 1 3/16" wide; 2 3/8" height. Can negative.

Philco No. 30-2015 .... 25c ea.; 10 for \$1.99

8x4 mfd, 250 W.V. Dry electrolytics in rectangular can 2 5/8" long; 1 3/16" wide; 2 1/2" high. Can negative.

Philco No. 30-2005 .... 20c ea.; 10 for \$1.59

8x4 mfd, 350 W.V. 10 mfd, 25 W.V. Dry electrolytic in rectangular can 2 5/8" long; 1" wide; 2 1/2" high. Can negative.

Philco No. 30-2072 .... 25c ea.; 10 for \$1.99

4x5 mfd, 250 W.V. Dry electrolytics in rectangular can 2 5/8" long; 1 3/16" wide; 2 3/8" high. Can negative.

Philco No. 30-2010 .... 15c ea.; 10 for \$1.19

10 mfd, 250 W.V. Dry electrolytic in round can 1" diameter, 1 3/8" long.

Philco No. 30-2003 .... 15c ea.; 10 for \$1.19

### PHILCO SPEAKERS

K-17 Philco speakers complete with output. Field 1,000 ohms. Output suitable for single 6L6; 6V6; or 45. Diameter 8".

Your cost ..... \$2.49

### RESISTORS

New De Jur 650 ohms, 20 Watts, vitreous wire wound ..... 10c ea.; 10 for 80c

New I.R.C. 17,500 ohms, 10 Watts, wire wound ..... 15c ea.

New Aerovox Pyrohm, heavy duty types as follows:—17,500 ohms, 60 Watts .... 50c ea.

500, 1,500 2,000 10,000 13,000 ohms, 75 Watts ..... 60c ea.

100, 150, 250, 360, 500, 750, 800, 3,000, 6,000, 7,500 8,000, 12,000, 13,975, 20,000 ohms, 100 Watts ..... 70c ea.

## A & A Radio Service Supply

101 QUEEN ST. W.

TORONTO, ONT.